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Title: Waste Compliance & Tracking System: A Comprehensive Solution for Managing Waste

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Waste Compliance & Tracking System

A Comprehensive Solution for Managing Waste

Alex Baker

May 2019



Managed by Triad National Security, LLC for the U.S. Department of Energy's NNSA



- History of WCATS
- Current Status
- Features
- Future Improvements

Waste Compliance and Tracking System

- WCATS manages nuclear, radioactive, chemical, and hazardous waste
- Data in WCATS constitutes the operating record for managing waste
- Used throughout the LANL complex (Triad, N3B) since 2010.
- WCATS includes the following data:
 - 1,483 current users (1418 LANL, 65 LLCC/N3B)
 - 820,000+ container records
 - 7,840 active containers at LANL
 - 5,405 active containers at LLCC
 - 138 active containers at other locations
 - 39,000+ waste streams
 - 1,867,000+ historical tasks

Waste management relies on IT systems

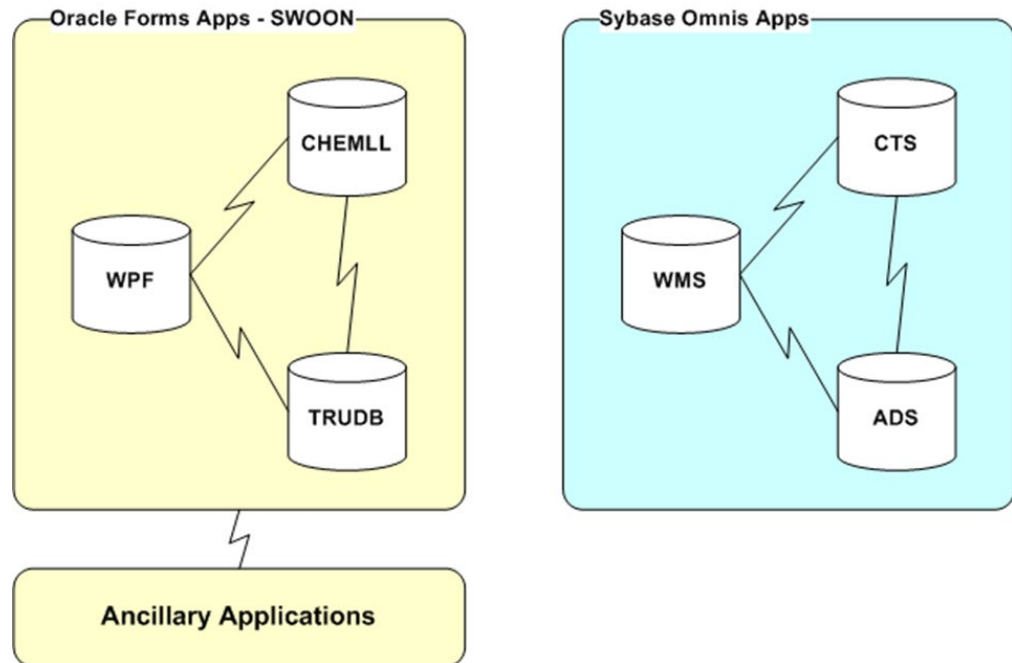


- Objective: treatment or disposal
- *The success of a waste management organization is measured by the quality of its records, and its ability to recall that information on demand.*

WCATS History – Initial Challenge

- 2006 – WCATS development begins
 - Aging technology
 - Need systems to talk to each other more easily
 - All-in-one solution
 - No available options for purchasing or licensing waste management software

Pre-WCATS LANL Waste Information Systems



WCATS History – Phased Implementation

Phase	Impact	Date
Restart (Hiring, Servers, Setup)		Feb 2009
Requirements Analysis and Scoping		Oct 2009
WMS, CTS, & ADS Replacement	Newly-generated TRU (CMR/TA-55)	Mar 2010
WPF Replacement (SWOON)	Waste stream profiles	Oct 2010
CHEM/LL Replacement (SWOON)	Chemical, LLW, hazardous waste	Feb 2012
TRUDB Replacement (SWOON)	Legacy TRU Waste (TA-54 Area G)	Aug 2013
Green-Is-Clean Replacement	GIC Waste (Labwide)	May 2014
<i>Planned: Ongoing maintenance of WCATS, new enhancements</i>		

Key Features of WCATS

- One system for all waste types
- Mobile apps for field work
- Migrate historical waste information
- Provide flexible work flow management
- Support EPA, DOT, NRC, and DOE requirements for waste and software quality
- Low maintenance costs

Phased Deployment Approach

- 1) Configure platform & migrate data (build 1 to n)
- 2) Customer previews (show & explain)
- 3) Customer workshops (hands-on)
- 4) Data migration QA (sampling plan)
- 5) Verification & validation
- 6) End-user training
- 7) SCB deployment approval
- 8) Deployment outage
- 9) Final data migration QA
- 10) Production release

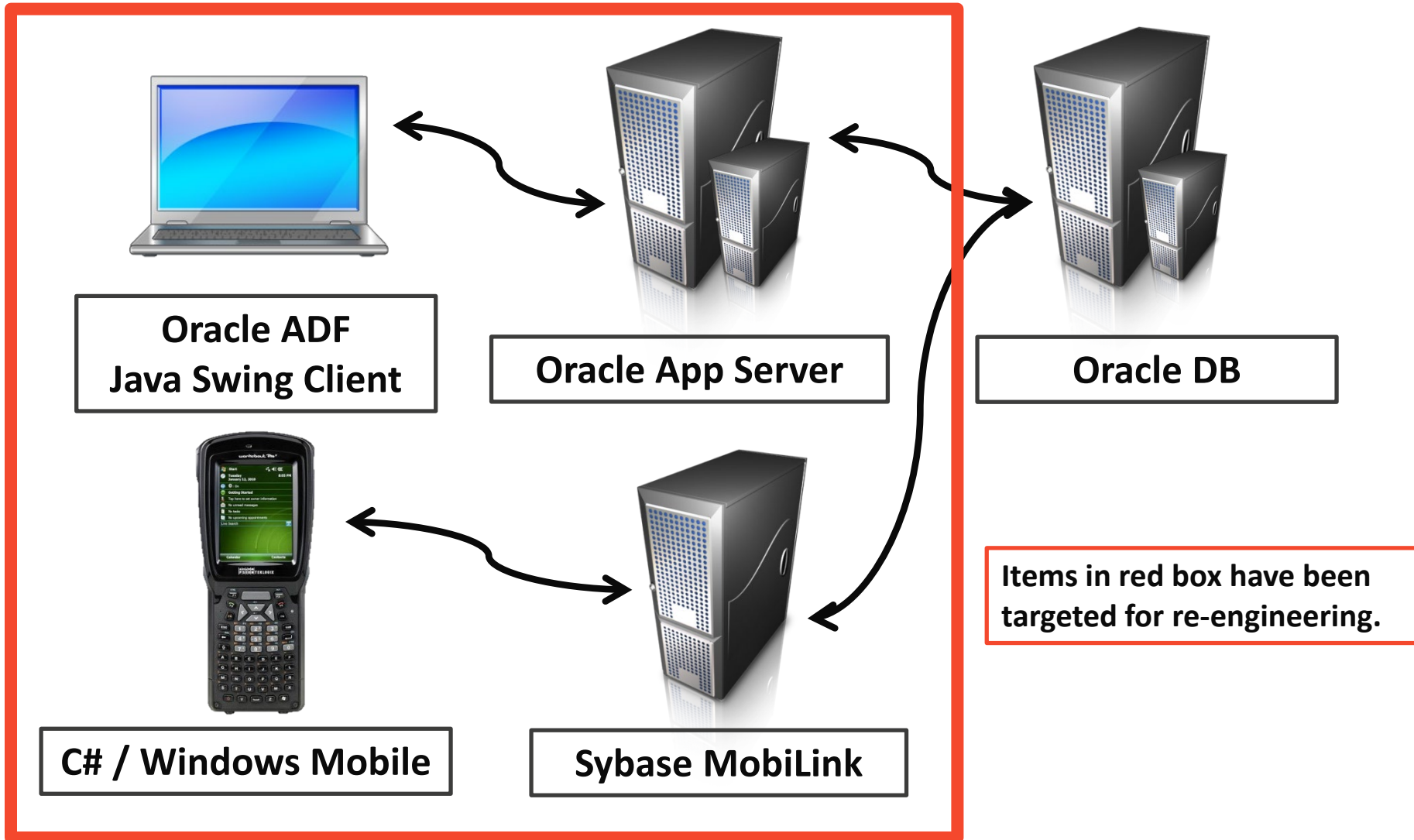
Software Classification

- Safety Grade A, Risk Level 1, Custom Software
 - Safety Management & Administrative Controls (SMAC)
 - LANL's P1040 and DOE 414.1D Software Quality Requirements
- Full Lifecycle Documentation Required:
 - Software Quality Management Plan (SQMP)
 - Software Configuration Management Plan (SCMP)
 - Requirements
 - Design
 - User's Manual
 - Data Migration Plan
 - Implementation Document
 - Independent Verification and Validation (IV&V) Plan
 - IV&V Results

Software Change Management

- Change Control Board (CCB)
 - Classify issues (enhancement, bug, training)
 - Reviews objective evidence
 - Ensures compliance with SQA requirements
 - Submits enhancement requests to SCB
- Software Change Board (SCB)
 - Review & approve enhancement requests
 - Staffed with stakeholder representatives by functional area
 - Approve software baselines submitted for review.

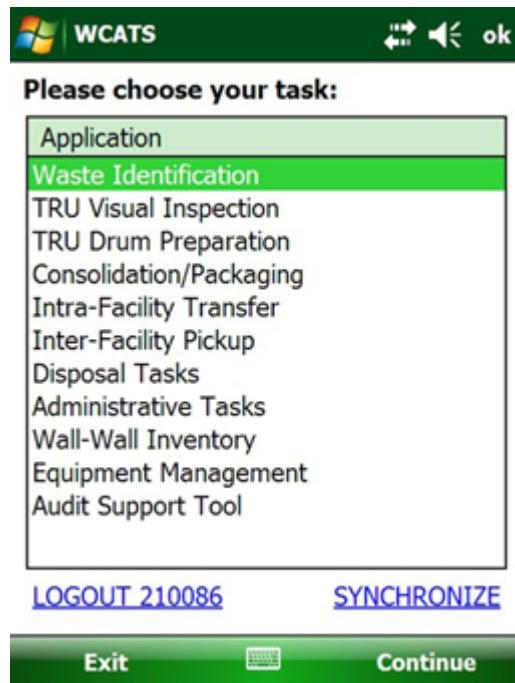
WCATS – Current Technologies



Four Major Subsystems

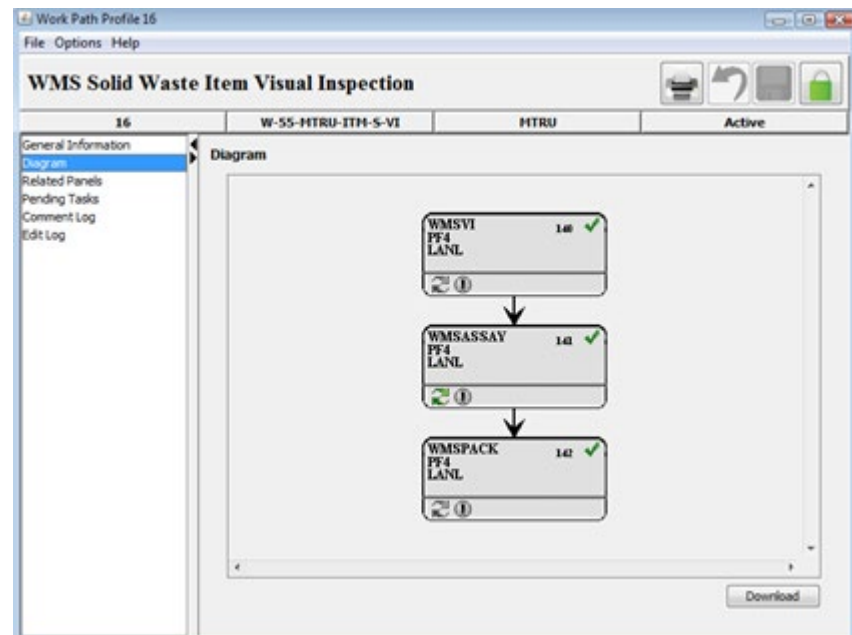
1. Waste stream profiles to characterize, classify, and approve waste for generation
2. Container profiles to represent waste items & containers
3. Task profiles to record unit operations for treatment, storage, disposal, ...
4. Equipment profiles to define and manage torque wrenches, scales, ...

Mobile Apps for Field Work



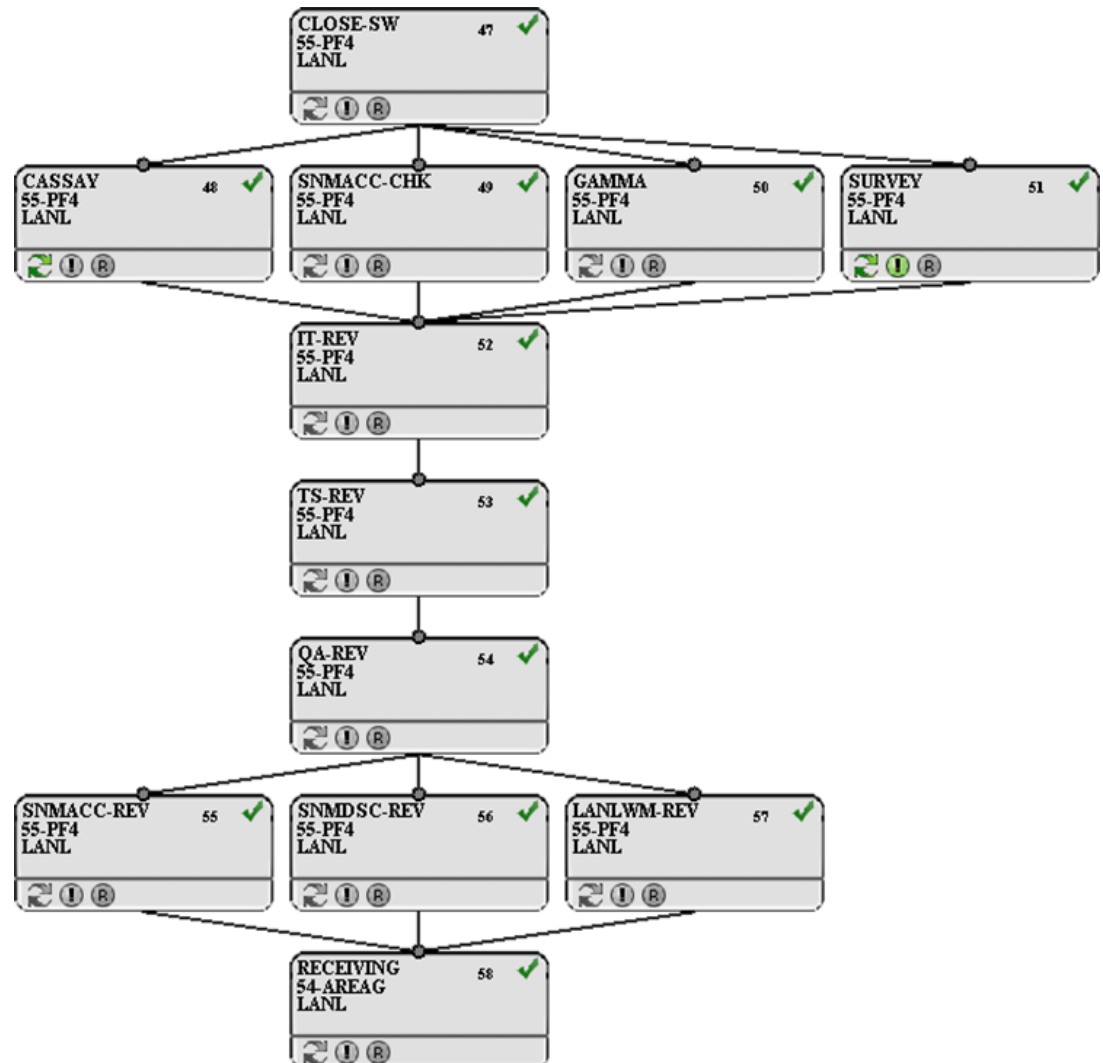
Flexible Work Flow Management

- User-defined work path
- Controls sequence of operations
- Improves efficiency & reduces operational mistakes
- Visual work path editor

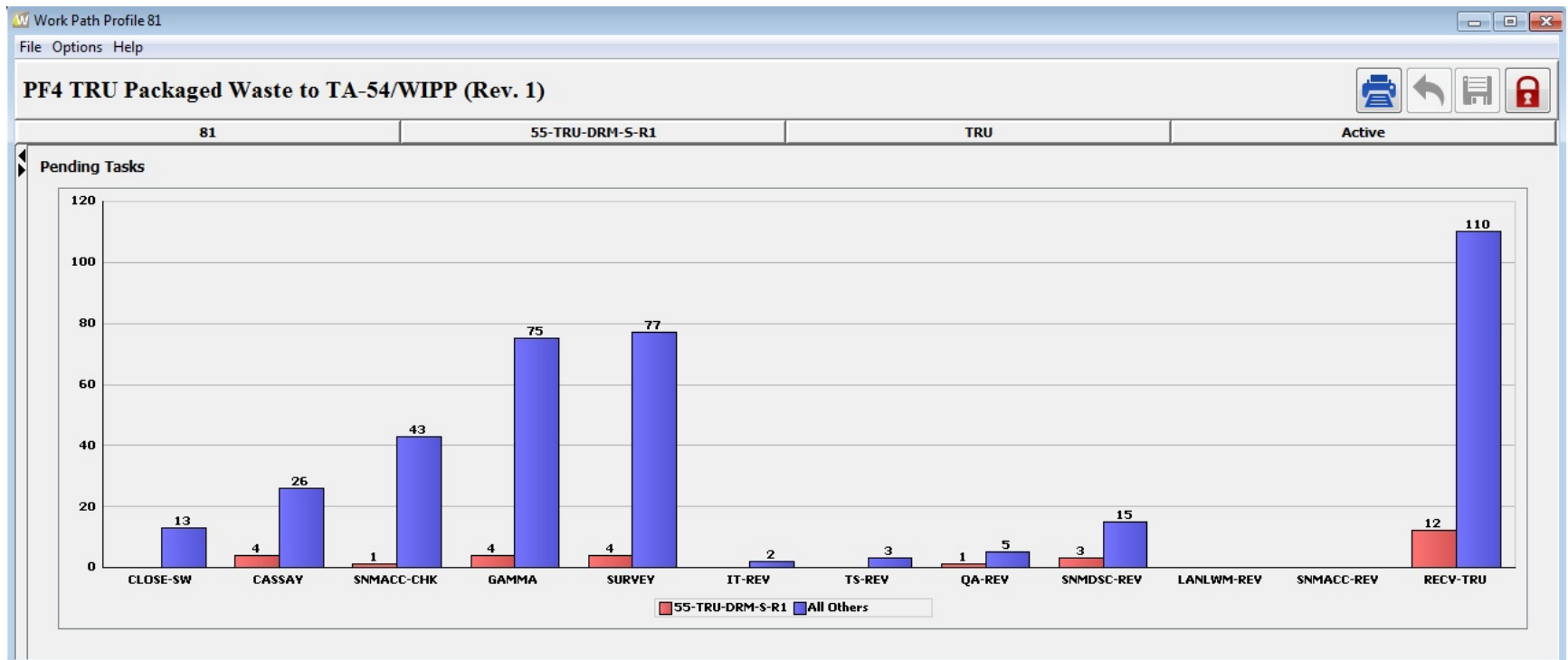


Complex Work Flow Management

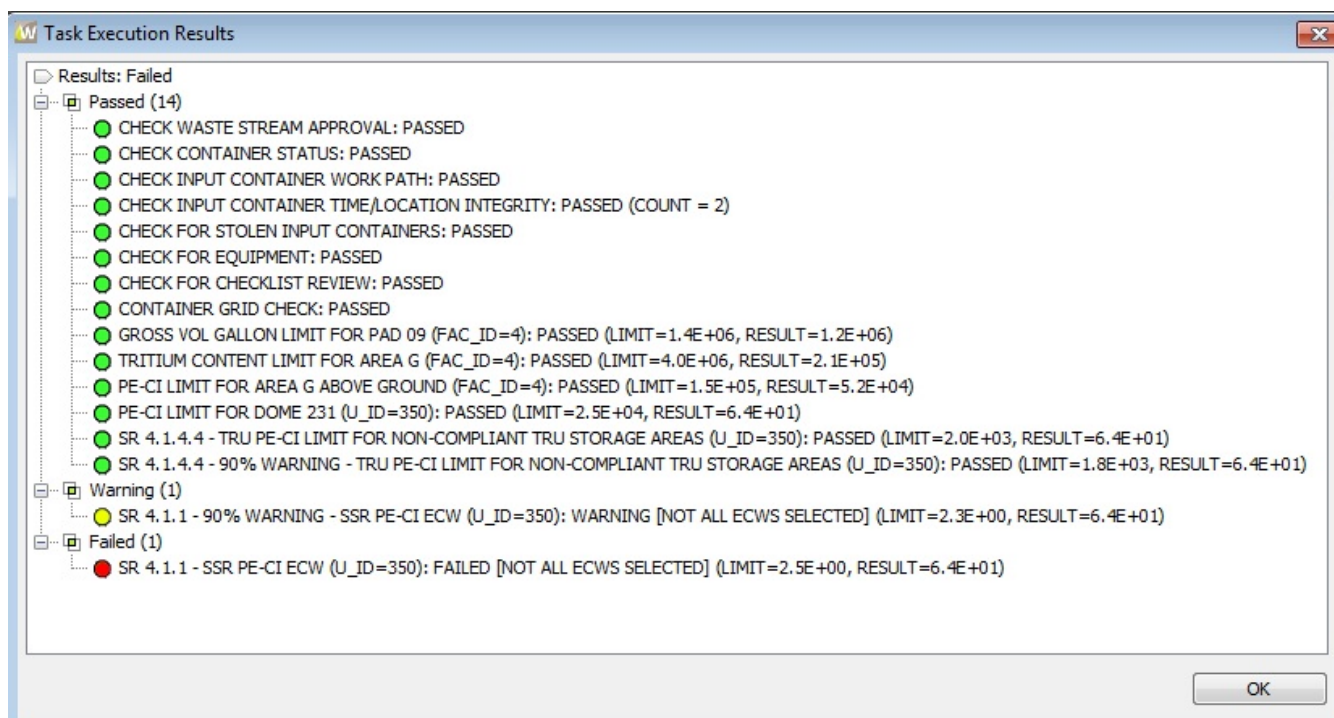
- Parallel steps
- Optional steps
- Repeatable steps



Work Flow Management & Logistics



Dynamic Inventory Assessment Rules



- Enforce permit, PA, and TSR inventory rules
- Each transaction triggers evaluation of applicable rules
- Monitor RCRA <90 day areas

Integrating Institutional Databases (External Interfaces)

- Design to Keep Reliability & Availability High
- Use a Common Architecture for Implementing & Monitoring Interfaces
- LANL's "External Interfaces":
 - Employee
 - Financial
 - Training
 - Chemical Inventory
 - Structures (i.e., facilities, buildings, rooms)
 - RCRA Site Registration (e.g., less than 90-day storage areas, radiological areas)

WCATS – Look to the Future

- Application is stable and adaptable
 - Database on stable technologies
 - Application written to allow administrators to do most configuration and update needs
 - Many customer enhancements can be captured with WIRA (APEX) reports
- New Desktop Application and Mobile Devices
 - Move to new, more supported open source technologies
- Interest from outside labs

Demonstration

- Desktop
- Waste Information Reporting Application (WIRA)
- Mobile Applications



Questions?

